

**AMENDMENTS TO THE SPECIFICATION**

Following the title, please insert the following paragraphs:

**Cross-Reference to Prior Application**

This is a U.S. National Phase application under 35 U.S.C. §371 of International Patent Application No. PCT/JP2003/009328 filed July 23, 2003, and claims the benefit of Japanese Patent Application No. 2002-214603 filed July 23, 2002 both of which are incorporated by reference herein. The International Application was published in Japanese on January 29, 2004 as WO 2004/009663 A1 under PCT Article 21(2).

Please replace the paragraph starting from page 13, line 1 with the following amended paragraph:

--Furthermore, the groups  $R_6$  to  $R_8$   $R_9$  may contain a substituent group at a suitable carbon atom, and specific examples of this substituent group include a halogen atom such as a fluorine atom, chlorine atom, or bromine atom, a hydrocarbon group such as a methyl group, ethyl group, n-propyl group, phenyl group, naphthyl group, or benzyl group, an acyl group such as an acetyl group or a benzoyl group, a hydrocarbon oxy group such as a nitrile group, nitro group, methoxy group, or phenoxy group, as well as other groups such as a methylthio group, methylsulfinyl group, methylsulfonyl group, amino group, dimethylamino group, or anilino group.--

Please replace the paragraph starting from page 15, line 9 with the following amended paragraph:

--Suitable compounds include (meth)acrylates such as methyl (meth)acrylate, ethyl (meth)acrylate, n-butyl (meth)acrylate, t-butyl (meth)acrylate, cyclohexyl (meth)acrylate, benzyl (meth)acrylate, isobornyl (meth)acrylate, dicyclopentenyl (meth)acrylate, 1-adamantyl (meth)acrylate, 2-methyl-2-adamantyl (meth)acrylate, 1-methylenadamantyl (meth)acrylate, 1-ethylenadamantyl (meth)acrylate, 3,7-dimethyl-1-adamantyl (meth)acrylate, tricyclodecanyl (meth)acrylate, norbornane (meth)acrylate, menthyl (meth)acrylate, n-propyl (meth)acrylate, isopropyl (meth)acrylate, 2-ethylhexyl (meth)acrylate, isodecyl (meth)acrylate, isoctyl

(meth)acrylate, lauryl (meth)acrylate, cyclohexyl (meth)acrylate, tetrahydrofuryl (meth)acrylate, tetrahydropyranyl (meth)acrylate, 3-oxocyclohexyl (meth)acrylate, butyrolactone (meth)acrylate, and mevalonic lactone (meth)acrylate; conjugated dienes such as 1,3-butadiene, isoprene, 2,3-dimethyl-1,3-butadiene, 1,3-pentadiene, 2-methyl-1,3-pentadiene, 1,3-hexadiene, 1,6-hexadiene, 4,5-diethyl-1,3-octadiene, 3-butyl-1,3-octadiene, and chloroprene;  $\alpha,\beta$ -unsaturated carboxylic acid imides such as N-methylmaleimide and N-phenylmaleimide; and  $\alpha,\beta$ -unsaturated nitriles such as (meth)acrylonitrile.--

Please replace the paragraph starting from page 24, line 4 with the following amended paragraph:

--Using transition metal complexes with ruthenium as the central metal as representative examples, specific examples of the transition metal complex used in producing a copolymer of the present invention include dichlorotris(triphenylphosphine) ruthenium, dichlorotris(tributylphosphine) ruthenium, dichloro(trialkylphosphine)p-cymene ruthenium, dichloro-di(tricymenephosphine)styryl ruthenium, dichloro(cyclooctadiene) ruthenium, dichlorobenzene ruthenium, dichloro-p-cymene ruthenium, dichloro(norbornadiene) ruthenium, cis-dichlorobis(2,2'-bipyridine) ruthenium, dichlorotris(1,10-phenanthroline) ruthenium, carbonylchlorohydridotris(triphenylphosphine) ruthenium, chlorocyclopentadienylbis(triphenylphosphine) ruthenium, chloroindenylbis(triphenylphosphine) ruthenium, and dihydrotetrakis(triphenylphosphine) ruthenium, and of these, dichlorotris(triphenylphosphine) ruthenium, chloroindenylbis(triphenylphosphine) ruthenium, and dihydrotetrakis(triphenylphosphine) ruthenium are preferred. In addition, specific examples of other transition metal complexes include iron complexes such as di(triphenylphosphine) iron dichloride, di(tributylamino) iron dichloride, triphenylphosphine iron trichloride, (1-bromo)ethylbenzene-triethoxyphosphine iron dibromide, (1-bromo)ethylbenzene-triphenylphosphine iron dibromide, (1-bromo)ethylbenzene-[4,4'-di(5-nonyl)-2,2'-bipyridine] iron dibromide, (1-bromo)ethylbenzene-tri-n-butylamino iron dibromide, (1-bromo)ethylbenzene-tri-n-butylphosphine iron dibromide, tri-n-butylphosphine iron dibromide, [4,4'-di(5-nonyl)-2,2'-bipyridine] iron dibromide, tetraalkylammonium iron(II) trihalide, dicarbonylcyclopentadienyl

iron(II) iodide, dicarbonylcyclopentadienyl iron(II) bromide, dicarbonylcyclopentadienyl iron(II) chloride, dicarbonylindenyl iron(II) iodide, dicarbonylindenyl iron(II) bromide, dicarbonylindenyl iron(II) chloride, dicarbonylfluorenly iron(II) iodide, dicarbonylfluorenly iron(II) bromide, dicarbonylfluorenly iron(II) chloride, 1,3-diisopropyl-4,5-dimethylimidazol-2-ylidene iron chloride, and 1,3-diisopropyl-4,5-dimethylimidazol-2-ylidene iron bromide; ruthenium complexes such as dicarbonylcyclopentadienyl ruthenium(II) iodide, dicarbonylcyclopentadienyl ruthenium(II) bromide, dicarbonylcyclopentadienyl ruthenium(II) chloride, dicarbonylindenyl ruthenium(II) iodide, dicarbonylindenyl ruthenium(II) bromide, dicarbonylindenyl ruthenium(II) chloride, dicarbonylfluorenly ruthenium(II) iodide, dicarbonylfluorenly ruthenium(II) bromide, dicarbonylfluorenly ruthenium(II) chloride, and dichloro-di-2,6-bis[(dimethylamino)-methyl]( $\mu$ -N<sub>2</sub>)pyridine ruthenium (II); nickel complexes such as carbonylcyclopentadienyl nickel(II) iodide, carbonylcyclopentadienyl nickel(II) bromide, carbonylcyclopentadienyl nickel(II) chloride, carbonylindenyl nickel(II) iodide, carbonylindenyl nickel(II) bromide, carbonylindenyl nickel(II) chloride, carbonylfluorenly nickel(II) iodide, carbonylfluorenly nickel(II) bromide, carbonylfluorenly nickel(II) chloride, carbonylfluorenly nickel(II) iodide, carbonylfluorenly nickel(II) bromide, carbonylfluorenly nickel(II) chloride, o,o'-di(dimethylaminomethyl)phenyl nickel halide, di-triphenylphosphine nickel dibromide, di(tri-n-butylamino) nickel dibromide, 1,3-diaminophenyl nickel bromide, di(tri-n-butylphosphine) nickel dibromide, and tetra(triphenylphosphine) nickel; molybdenum complexes such as tricarbonylcyclopentadienyl molybdenum(II) iodide, tricarbonylcyclopentadienyl molybdenum(II) bromide, tricarbonylcyclopentadienyl molybdenum(II) chloride, di-N-aryl-di(2-dimethylaminomethylphenyl) lithium molybdenum, di-N-aryl(2-dimethylaminomethylphenyl)-trimethylsilylmethyl lithium molybdenum, and di-N-aryl(2-dimethylaminomethylphenyl)-p-tolyl lithium molybdenum; tungsten complexes such as tricarbonylcyclopentadienyl tungsten(II) iodide, tricarbonylcyclopentadienyl tungsten (II) bromide, and tricarbonylcyclopentadienyl tungsten (II) chloride; cobalt complexes such as dicarbonylcyclopentadienyl cobalt (I); manganese complexes such as tricarbonylcyclopentadienyl manganese(I) and tricarbonyl(methylcyclopentadienyl) manganese(I); rhenium complexes such as tricarbonylcyclopentadienyl rhenium(I) and dioxobis(triphenylphosphine) rhenium iodide; rhodium complex salts such as tri(triphenylphosphine) rhodium chloride; palladium complexes such as

triphenylphosphineacetyl palladium; copper complex salts of diphenanthroline, substituted diphenanthroline, 2,2' : 6',2"-terpyridine, pyridinimine, or cross-linked aliphatic diamine, and copper complexes such as acetyl[4-4'-di(5-nonyl)-2,2'-bipyridine] copper, hexafluorophosphine-di[4-4'-di(5-nonyl)-2,2'-bipyridine] copper, copper thiocyanate, bipyridine copper with coordinated O, S, Se, or Te, and copper with coordinated alkylbipyridinylamine, alkyl substituted tripyridine, di(alkylamino)alkylpyridine, iminodipyridine, ethylenediaminedipyridine, or tri(pyridinylmethyl)amine. Of these, dicarbonylcyclopentadienyl iron  $\left(\text{Fe}\right)$  (II) iodide, dicarbonylcyclopentadienyl ruthenium(II) iodide, and carbonylcyclopentadienyl nickel(II) iodide and the like are preferred. These transition metal complexes can be used either singularly, or in combinations of two or more different complexes.--

Please replace the paragraph starting from page 41, line 5 with the following amended paragraph:

--Specific examples of suitable electrolyte salts include conventional alkali metal salts such as LiCF<sub>3</sub>SO<sub>3</sub>, LiN(CF<sub>3</sub>SO<sub>2</sub>)<sub>2</sub>, LiC(CF<sub>3</sub>SO<sub>2</sub>)<sub>3</sub>, LiC(CH<sub>3</sub>)(CF<sub>3</sub>SO<sub>2</sub>)<sub>2</sub>, LiCH(CF<sub>3</sub>SO<sub>2</sub>)<sub>2</sub>, LiCH<sub>2</sub>(CF<sub>3</sub>SO<sub>2</sub>), LiC<sub>2</sub>F<sub>5</sub>SO<sub>3</sub>, LiN(C<sub>2</sub>F<sub>5</sub>SO<sub>2</sub>)<sub>2</sub>, LiN(CF<sub>3</sub>SO<sub>2</sub>)<sub>2</sub>, LiB(CF<sub>3</sub>SO<sub>2</sub>)<sub>2</sub>, LiPF<sub>6</sub>, LiSbF<sub>6</sub>, LiClO<sub>4</sub>, LiI, LiBF<sub>4</sub>, LiSCN, LiAsF<sub>6</sub>, NaCF<sub>3</sub>SO<sub>3</sub>, NaPF<sub>6</sub>, NaClO<sub>4</sub>, NaI, NaBF<sub>4</sub>, NaAsF<sub>6</sub>, KCF<sub>3</sub>SO<sub>3</sub>, KPF<sub>6</sub>, KI, LiCF<sub>3</sub>CO<sub>3</sub>, NaClO<sub>3</sub>, NaSCN, KBF<sub>4</sub>, KPF<sub>6</sub>, Mg(ClO<sub>4</sub>)<sub>2</sub>, and Mg(BF<sub>4</sub>)<sub>2</sub>, and these electrolyte salts may be used either singularly, or in mixtures of two or more different salts. Of the above electrolyte salts, lithium salts are particularly preferred.--

Please replace the paragraph starting from page 13, line 1 with the following amended paragraph:

--To 47 g of toluene under an argon atmosphere were added 0.02 g (0.02 mmol) of chloropentamethylcyclopentadienyl-bis(triphenylphosphine)ruthenium, 17.8 g (0.1 mmol) of the poly-(styrene-b-AME-400) polymer obtained in (2) above, 3.7 g (18 mmol) of isobornyl acrylate, and 0.57 g (5 mmol) of n-octane, and following mixing to generate a homogeneous solution, 0.03 g (0.2 mmol) of di-n-butylamine was added, and the resulting mixture was heated to 80°C under constant stirring to initiate the copolymerization reaction. Following reaction for 20 hours from the

point of reaction initiation, the copolymerization reaction was halted by cooling the polymerization reaction system to 0°C. The methyl isobornyl acrylate conversion ratio was 30%. The polymerization solution was then purified by passage through a column to remove the metal complex and any unreacted monomers, and the volatile fraction was then removed under reduced pressure, yielding a multi-branched polymer compound with a poly-(styrene-b-AME-400-b-isobornyl acrylate) type structure in which the methoxypolyethylene glycol acted as a graft chain. The thus obtained multi-branched polymer compound was a single peak polymer with a ratio between the block chain A, and the combination of the block chain B and the block chain C of  $A/(B+C) = 1.1/1$  (degree of polymerization ratio), and  $M_n = 189,000$ .--